



APPLICATION OF BUSINESS CONTINUITY MANAGEMENT SYSTEM INTO THE CRISIS MANAGEMENT FIELD

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Review article

Abstract: Establishing business continuity management (BCM) creates the basis of every organization's strategy. BCM includes complex procedures that help solving unexpected situations of natural and anthropogenic nature (e.g. fire or flood). Planning of the BCM is a process that helps organizations identify critical processes and implement plans for securing and restoring key processes. The aim of this paper is to demonstrate the application of a systemic approach to BCM known as Business Continuity Management System (BCMS) into the military field. This article describes the life cycle of the BCMS, which is based on PDCA cycle. Subsequently it is applied to the activities carried out by the University of Defence during activation of forces and means in the frame of the Integrated Rescue System (IRS) in case of emergency - an accident in a nuclear power plant in the Czech Republic. Activities in various stages of deployment of allocated forces and means are managed and evaluated using the Military Continuity Management System (MCMS) application.

Keywords: Business continuity management system, crisis management, military, emergency situation, nuclear power plant.

Introduction

Implementation of business continuity management supports ensuring of the security system functioning in crisis situations and preparation for them. Due to the frequent occurrence of emergencies, business continuity plans or their parts start to be applied not only by manufacturing organizations, but also by public authorities, including the Ministry of Defence. University of Defence as a part of the Army of the Czech Republic (ACR) deploys allocated forces and means in the frame of the integrated rescue system in accordance with the law No. 239/2000 Coll. (Act, 2000), during a nuclear power plant accidents in the area of the Czech Republic.

Materials and Methods

Business Continuity Management (BCM) is a process that allows to efficiently overcome operational disruption whereas the organization should be prepared for an emergency situation e.g. accident to be able to minimize its impact and enable the fastest recovery possible.

In 2006 Standard BS 25999 was published in the UK by the British Standards Institute (BSI) in collaboration with the Business Continuity Institute (BCI) in order to establish a uniform standard of good practice and at the same time satisfy the needs of customers, clients, government, regulators and all other stakeholders concerned. BS 25999 comprises a pair of standards that provides recommendations and requirements for the area of business continuity management. The first part of the standard BS 25999-1:2006 "Code of practice for business continuity management" determines the basic principles and provides recommendations for implementing BCM in the organization (BS, 2006). The second part of this new standard, BS 25999-2:2007 "Specification for business continuity management" which provides the requirements for certification BCMS (BS, 2006) was published in 2007.

Business Continuity Management System (BCMS) is defined by British standard (BS, 2007). BCMS is an integral part of a generic management system, introducing, implementing, managing, monitoring, assessing, customizing and improving

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the continuity management in an organization. (Sharp, 2008)

BCM can be seen as strategic and tactical competence of the organization to respond to the emergency and disruption of its activities and the continuation of the activities on predetermined acceptable level. BCMS is implemented to some extent by every organization, but a question is what exactly was taken into account during the implementation. Defining appropriate actions should be based on the Czech standard ISO 22301 Societal security - Business Continuity Management Systems - Requirements, which states what should organizations include within BCMS. (Urban, 2015)

BCM brings significant results if people are quickly acquiring skills, build adaptable and transferable records of organizational procedures, writing down the people experience and stories from encountered situations. In US Army they use a document called Operations Order (OPORD) that is aimed at subordinates from their leader and deals with coordinated execution of operations. BCM manages lots of situations with staff turnover, skill transfer or missing employees. BCM makes staff changes easier and straight forward and can help master transformation changes and tasks. (Continuity Forum, 2016)

Importance of BCM could be shown at experience from United Kingdom. Ministry of Defence (MoD) in UK uses the Joint Services Publication (JSP, 2011), where MoD plays a key role in defending the UK and its interests and in strengthening international peace and stability. BCM supports the achievement of the Defence Aim and the delivery of the Strategy for Defence by ensuring that MoD can continue to deliver or recover critical outputs, particularly operations, in the event of disruption. MoD BCM aims to improve the resilience of MoD to disruption, protecting the ability to deliver key Defence outputs and objectives, provide a tried and tested method for restoring the MoD's ability to deliver key Defence activities, to a satisfactory level and within a specific time after disruption and deliver a proven capability to manage any disruption to MoD, and protect the reputation of both the Department and the UK Armed Forces. There are three areas that are vital do MOD's ability to continue to deliver critical outputs following a disruptive event: people, processes and resources. (JSP, 2011)

Systemic approach to business continuity management (Business Continuity Management System, BCMS) is based on PDCA (Plan-Do-Check-Act) cycle. For planning, implementing and improving the efficiency of the business continuity management, an approach known in other modern

management systems, which are e.g. Quality Management System - QMS, Environmental Management System - EMS, and Occupational Health and Safety Assessment Series - OHSAS, is used, consisting in the implementation of the so called integrated management system. It is a unified management system that meets requirements of at least two of the following management systems - business continuity management, information security, quality management, environmental management and occupational safety and health. (Urban, 2015; Šmíd, 2016)

Efficient support from the management is essential for functioning of the entire system. The whole process must be implemented throughout the organization as a whole, and has to form an integral part of operations and production processes. It also has to be encouraged throughout the organization, including its subcontractors and other stakeholders. BCM can be implemented into all organizations regardless of size or area of business. The basis of the BCM life cycle is BCM programme management, which is considered to be a continuous process (BS, 2006), see Fig. 1.



Fig. 1 The Business Continuity Management life cycle

Business continuity management system includes these steps (Kotulová, 2010):

- understanding the organization;
- determining a BCM strategy;
- developing and implementing a BCM response;
- exercising, maintaining and reviewing BCM.

Understanding the organization

Business continuity management of the company is an issue whose solution requires a comprehensive approach to understanding the organization's activities. At this stage it is important to define the main processes running in the organization and resources that are involved in their realization. Part of this phase is also represented by an impact analysis.

Determining a BCM strategy

Business continuity strategy defines the basic background of business continuity management. In this phase, procedures for the selection of a suitable strategy for reducing losses in case of emergencies are designed. Specific steps for crisis management situations have to be determined. All procedures are based on material as well as human resources of the organization and the ability to preserve the continuous operation in the case of emergency or disaster so as the functioning of the organization and provision of services under limited conditions are not endangered.

Developing and implementing a BCM response

One of the main outputs of business continuity management is a Business Continuity Plan. The plan provides a comprehensive overview of the steps and procedures that must be implemented for business continuity and operations. This plan covers all identified threats that could disrupt operations. The plan also contains a detailed guide how to restore services in the shortest possible time.

Exercising, maintaining and reviewing BCM

Tests that take place at many levels, from the checking of the contacts to the training move of (part of) the organization into another location are very important in the process of business continuity management. Training tests help in determining whether strategies and BCP plans are up-to-date and reflect the actual needs of the organization. Regular testing increases the ability of employees to respond flexibly to unexpected events. They also help to optimize the resources needed for the restoration process. (BDO, 2014)

Discussion of Application of Business Continuity Management into the Military Area

Army of the Czech Republic belongs, in accordance with the Act on Integrated Rescue System (Act, 2000), among the other components that provide planned assistance upon request. Forces and means can be used to reinforce the fundamental components of the IRS during liquidation of natural and anthropogenic disaster consequences, when the situation cannot be managed solely by the basic IRS components (Fire Rescue Brigade of the Czech Republic, the fire brigades, the Czech police and emergency medical services).

University of Defence as a state organizational unit is also involved in the activation and deployment of forces and means within the IRS during nuclear powerplant accidents in the area of the Czech Republic in accordance with the government regulation No. 465/2008 Coll., (Act, 2008) and the directive of the Chief of the General Staff of Armed Forces of the Czech Republic (Directive, 2013). Deployment of allocated forces and means is required through the headquarters of respective regional headquarters of the Police of the Czech Republic through integrated operation centre of the Police of the Czech Republic. University of Defence activities are regulated by the Rector-Commandant and are initiated by the system of taking over a regulation or requirements for the deployment of forces and means by informing the principal officers and the Chief of the Operations Centre. The description of the individual BCM steps is listed below.

Understanding the organization

University of Defence is deployed in the case of a radiation accident identified as the third grade emergency event in one of the nuclear plants present on the territory of the Czech Republic, i.e. in Dukovany and Temelin nuclear power plants. In such an event, it releases an inadmissible serious thaw of radioactive substances into the environment, requiring introduction of urgent measures to protect the population as well as environment. During this event not only intervening personal of the license holder and intervening personal are activated according to the external emergency plan or respectively emergency district plan. There are also second grade emergencies and relevant public authorities involved.

For this purpose, the University of Defence has prepared a plan for the deployment of officers in the frame of the IRS during accidents in the nuclear power

plant. The purpose of applying BCM is preventive preparation for the steps necessary for dealing with the accident and application of processes for its managing. The University of Defence has prepared processes for the event of the third grade emergency to ensure response to the resulting crisis. These include steps and procedures for business continuity management, where the plans have been developed for dealing with it.

Determining a BCM strategy

In the first phase it is crucial to create a strategy for response to emergencies in an organization. University of Defence had to implement procedures for dealing with the third grade emergencies to be able to maintain control over the current situation and eventually ensure reaching the required levels of business continuity by plan activation. During determining the strategies, it must be considered how the key resources e.g. people, technique, material and information will be involved. Particular emphasis is placed on the communication with its own staff.

Developing and implementing a BCM response

In the next phase it is necessary to determine how the operation of the University of Defence will be activated within the target recovery time (RTO) and the necessary resources have to be defined for it. Sub-continuity plans should identify activities and resources necessary for the smooth emergency management.

Every plan should clearly specify the conditions for its activation, as well as to identify the persons responsible for carrying out each point of the plan. As mentioned before, the operation of the University of Defence is activated by taking over the regulation or requirements for deploying forces and means through the University of Defence Duty Officer, who subsequently informs the main functionaries, especially the Rector-Commandant and the Chief of the Operations Centre. The University of Defence Duty Officer after taking over the requirements produces an initial report on the occurrence of the emergency containing information related to the emergence of the accident and its nature, extent, location, number of forces and means and expected activities.

Elaborated plan is open to all employees, who are required to proceed according to it. Generally, each plan should include at least the following information described in more detail below (Government Regulation, 2008):

- 1) Purpose and scope;
- 2) Roles and responsibilities;
- 3) Conditions and procedures of the plan activation;
- 4) Locations;
- 5) The list of tasks and activities;
- 6) Important contact information;
- 7) Other necessary data and information.

Continuity plans must provide answers to the following questions: What should be done? When? Where are the resources located? Who is involved? How should be the business continuity achieved? Answers to these questions create the part of an elaborated plan for the deployment of members of the University of Defence within the IRS during the emergency in a nuclear power plant.

The plan lists in detail how the University of Defence will proceed and manage the emergency situation and how the business continuity, in a pre-defined time ranges, will be achieved. The plan has to be brief, concise and easy to ensure its smooth implementation. The actual contents of the plan consist of the following sub-activities (Act, 2008):

- A. Purpose and scope. It is necessary to define the purpose and scope in the plan with regard to the organization. University of Defence has a clear mission in this regard. In the first stage, necessary powers and resources which are formed by students and permanent staff of school regiment must be activated and moved to predetermine reception places of territorial departments of PCR. In the next phase, these forces and means address the activities needed according to specification of the Regional Directorates of PCR. University of Defence allocates 454 soldiers in active service for the Dukovany nuclear power plant and 172 soldiers for Temelin nuclear power plant to perform the tasks of the order service of PCR. The basic task is to ensure accomplishment of the tasks of the order police related to regulation of the movement of people and ensuring public order and safety during the incidence of emergency in a nuclear power plant.
- B. Roles and responsibilities. The plan identifies roles and responsibilities of the employees who are involved in it. Both the team leader i.e. Chief Operating Officer and the key team members and their deputies, for example bursary officer and commanders of allocated groups, who will be summoned in case of plan activation are identified. The plan determines their competences and persons to whom they have to report each step of the plan implementation.

- C. Plan activation. The plan has to include the circumstances under which it is to be activated, and also the information about who can order the plan activation. It is evident from the plan that activation occurs when the report about the incidence of the third grade emergency in the nuclear power plant is taken over. Activation of the plan in the form of summoning the forces and means to the workplace, especially the Chief Operating Officer is performed by the Defence Duty Officer of the University of Defence. After the arrival of the Chief Operating Officer all activities are controlled in accordance with his instructions.
- D. Locations. The plan includes detailed information about locations where to deploy forces and means, including map support. In case of incidence of the emergency in the nuclear power plant Dukovany, soldiers are allocated for the Regional departments of PCR Třebíč, Znojmo and Brno-venkov, when the accident occurs in the nuclear power plant Temelín, the places of deployment are České Budějovice and Tábor.
- E. Contact details. The plan must include contact information about the persons, both internal employees and external contacts to organizations and companies that closely participate in the plan implementation. These are e.g. local authorities, police of the CR and service providers. Separately from these plans there are data about cooperative and other contracts, for example contracts which purpose is providing meals to the participants in the area of deployment.
- F. Completion of emergency. The deployed teams are withdrawn from the place of deployment. In this context, the activities are finished and subsequently processing of reports on the team deployment completion is processed, then the final report, which contains calculations of total deployment costs, is compiled. These reports are sent to the Permanent Shift of Joint Operations Centre of the Ministry of Defence.

The main benefit of the plans for business continuity management is the fact that at the time of the plan activation, all responsible personnel is familiar with and trained in the procedure for dealing with emergencies. Specific procedure with contact indication and process of involvement of individual human and material resources are at the moment essential. All soldiers who carry out tasks of the Police of CR are armed with weapons and complete functional and personal protective equipment. Members of the University of Defence, who are called to perform tasks of PCR have duties and responsibilities of police officers in performing

police duties and are subordinate to members of PCR.

Exercising, maintaining and reviewing BCM

It is essential that the processed plans are tested and their completeness, realism and functionality verified. Shortcomings in resources or times can be identified during the testing. Testing can also revile discontinuities and omissions in the plans prior to their use in the case of emergency incidence. Testing and rehearse of plans also serve for training of those employees who are assigned roles in the business continuity plans.

One of the oldest axioms for BCMS is that a plan that is not tested or maintained is of little value or in some cases worse than no plan at all. It is absolutely crucial that all the people who are expected to play a part in the BCM arrangements understand their roles and feel reasonably comfortable with them. (Alexander, 2016)

Testing and revision of plans should take place at regular intervals, according to the schedule approved by management. University of Defence regularly tests prepared plans during training Zona, which takes place every two years. The aim of the training is to test the emergency preparedness of central state administration authorities, local government bodies and IRS components in dealing with emergencies arising in connection with simulated radiation accident in one of the nuclear power plants in the Czech Republic. In addition to the University of Defence, other components of the Armed Forces of the Czech Republic are involved in the training e.g. transport aircraft and mobile monitoring teams, which carry out monitoring of the radiation situation. (Directive, 2013)

Testing must be both practical and economical, designed to build confidence in the created plans. Testing of the plans must be managed on the basis of appropriate scenarios. Course of each test must be recorded in detail; all the activities and results of the tests have to be reviewed during feedback. For this purpose, MCMS application - Military Continuity Management System is being tested which is an application for modelling and simulation of management processes support at the moment of military unit alert.

Results

Managing the Emergency Incident in the Nuclear Power Plant in MCMS Application

MCMS application provides users with an integrated environment for creating continuity plan and allows the involvement of a broad team of processors and managers, for whom it defines clear roles and responsibilities.

Outputs of impact analysis on the processes are interpreted by systematization of causes. Causes are represented by identified threats, for which the plans are created. In the case of developing plans to deploy members of the UO within the IRS during the emergency accident in the nuclear power plant, the cause is third grade emergency. The causes are structured in Figure 2:

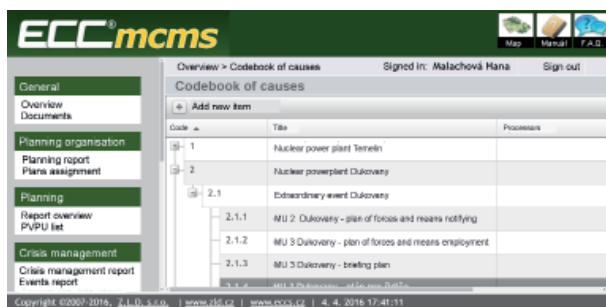


Fig. 2 Codebook of causes defined for emergency incident in the MCMS system

The main functionality of the application includes creating a measures list. In this part of the application it is possible to search in an extensive list using Boolean operators. If we choose the link *List of measures* in the main menu, which is placed under the *Codebook*, it produces a detailed list of measures that need to be carried out. This is the definition of both professional or managerial requirements on a minimum range of activities completed during the implementation of the plans that are executed by members of the University of Defence at set times. Figure 3 shows a list of measures that have to be implemented in connection with the cause marked as MU 3 Dukovany - a briefing plan. As a part of this plan the following tasks are carried out: fulfilment of tasks by the school regiment, processing the order to move, dividing the tasks among the members of the Operations Centre, providing a synergy and control of connection with the territorial department of the Police of the Czech Republic and finally requiring information about the radiation situation at the zone of emergency planning.



Fig. 3 Measures performed in the frame of the defined cause in the MCMS system

Other measures in the frame of the plan for ammunition supply point are the actions performed by ammunition supply point officer. This is the type of professional activity dealing with loading firearms, their transportation and their distribution to soldiers. The stated causes and actions can be assigned by a system appendix documents, methodologies, normative acts and links to the types of entities of crisis organizational structure and additional information.

MCMS application provides all processors of the plan with automatic editing of the default form of the plan, including all related information for the selected cause. Copies of the action initiate sequence of actions to be undertaken during implementing of the plan.

In the process of plan improvement, processor edits specific information, for example he defines to individual entities their roles in the activities as well as locations, notifying tasks, resources, etc. Most of the bonded information is available from the codebooks. Codebooks are processed for causes, crisis situations, locations, material and technical equipment, activated units, abbreviations, document templates etc. Plans can be interlinked with each other; can be predefined so that the completion of the action of ordered plan can be subject to implementation of the bonded plan.

MCMS application allows activation of events, execution of plans and tracking of the course of their progress. Active event defines plans by all processors created for the set cause and their own activation. The system creates a runtime copy of the plan activated, which can be further modified and supplemented by unplanned activities and information. All these changes are available through the application and provide a picture of the situation and its development. The original plan does not change. It also enables activation of events and implementing the plans in test mode for the needs of training.

During the course of plan processing, it is possible to change the status of the individual planned activities, carry out communication tasks, display, modify and supplement bonded documents and other information. To monitor and record the timing of the plan implementation, items of start time and completion of activities are editable. All user's actions in the system are recorded. (ZLD, 2015)

MCMS application can be linked to external data systems so that information changes will be automatically reflected into the previously elaborated plans. These are mainly personal systems - bond to application saves current data in crisis organizational structure. Application allows viewing the location address in a public portal map or in Geographical Information System (GIS) of the client. Application provides comprehensive processing of appendix documents, including storing different versions of annexes and the possibility of returning to their previous versions. The system also provides management of used abbreviations and their interpretation in selected interfaces. The application enables inner linear communication via system notifications.

Advantages and Benefits of the Application for Business Continuity Management

Application creator - company ZLD Ltd. lists its simplicity, clarity, consistency and agility among the main principles of the application. The possibility of its rapid integration into organization, wide participation of a large number of participants, rapid response to an incidence of the emergency event or crisis situations and efficient risk management belong among the benefits of using MCMS application. Then the application in the organization solves potential problem areas which may occur in organisations implementing BCM. These are mainly a non-system approach, lack of time for introduction of BCM, organizational, technical and qualification barriers, occupancy of key employees, imperfection of process maps and analyses and eventually different approaches of the participants. (ZLD, 2015)

MCMS is an application that provides technical and information support for business continuity management in emergency events and crisis situations. Effective response to a potential crisis and especially to its effective management can be achieved using the applications. It is an internet client-server application where the client part is accessible via the intranet from a standard web browser. (ZLD, 2015)

Bearing in mind that all business continuity planning activities have a cost in terms of money or

other resources. In order to facilitate BCP activities, it requires skilled and well educated people. Those people mean enormous cost on the side of their finding, training and motivation. Those resources face never ending competition on the market. Costs should be treated as any other expenses in the company and BCP is no exclusion but experts in this field are scarce and form hardly reachable asset for state agencies and employers. Without good workforce, civilian and military, we will be unable to deliver Departmental objectives. Other resources include MOD infrastructure, supplies, services, information, budget and the time required to meet objectives. Also these items mean expenses that cumulate as the BCP progresses.

Conclusion

The paper demonstrates application of Business Continuity Management System into the Military Area. Planning of the Business Continuity Management is a process that helps organizations identify critical processes and implement plans for securing and restoring key processes. BCM is applied to the activities carried out by the University of Defence during activation of forces and means in the frame of the IRS in case of emergency - an accident in a nuclear power plant Dukovany in the Czech Republic. Activities in various stages of deployment of allocated forces and means are managed and evaluated using the Military Continuity Management System application.

Abbreviation

ACR	Army of the Czech Republic
BCI	Business Continuity Institute
BCM	Business Continuity Management
BCMS	Business Continuity Management System
BCP	Business Continuity Planning
BSI	British Standards Institute
EMS	Environmental Management System
GIS	Geographical Information System
IRS	Integrated Rescue System
MCMS	Military Continuity Management System
MoD	Ministry of Defence
OHSAS	Occupational Health and Safety Assessment Series
OPORD	Operations Order
PDCA	Plan-Do-Check-Act
QMS	Quality Management System
RTO	Target Recovery Time

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